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ABSTRACT

A nonverbal, severely retarded, 24-year-old female, who had undergone abdominal surgery due to pica (compulsive eating of inedible substances) participated in the study. Antecendent scavenging behavior was reliably identified and redirected. Pica was prevented by using a short duration physical restraint. Giving non-edible items that might be ingested to staff was reinforced. A modified fencing helmet was used as an adjunct to help control pica. Results indicate that scavenging and resultant pica were both significantly reduced. (CL)

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DECREASING PICA BY TARGETING ANTECEDENT SCAVENGING BEHAVIORS

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Abstract

Scavenging is a serious problem among insititutionalized mentally retarded persons. One aim of this behavior is pica, the complusive eating of inedible substances such as metal screws, buttons and cloth items. A nonverbal, severely retarded, 24-year-old female, who had undergone abdominal surgery due to pica participated. Antecedent scavenging behavior was reliably identified and redirected. Pica was consequated using a short duration physical restraint. Giving items which may be ingested to staff was reinforced. A modified fencing helmet was used as an adjunct to help control pica. Results indicate that scavenging and resultant pica were both significantly reduced.

Scavenging is a serious problem among institutionalized mentally retarded persons. One aim of this behavior is pica, the complusive eating of non-nutritive or inedible substances such as metal screws, buttons, cigarette butts and cloth items. Pica can result in intestinal obstruction, constipation, nutritional anemia, and may even be the cause of death. The prevalence of pica has been estimated to be as high as 25% of mentally retarded in one institution (Danford & Huber, 1982). Pica is classified as an eating disorder in DSM-III (Spitzer & Cantwell, 1980). Occasional pica is considered a function of normal child development. Pica is thought to be pathological beyond the age of 12-18 months (Baltrop, 1966). It is typically observed more often in those who are severely or profoundly retarded than those who are mildly or moderately retarded.

A number of behavioral procedures have been used to treat pica, each with some degree of success. These studies operate under the basic assumption that the etiology of pica is similiar in nature to that of other behaviors such as self-stimulation and self-injury (i.e. a learned behavior). Procedures used in the treatment of pica in the mentally retarded include: timeout plus differential reinforcement of other behaviors (Ausman, Ball & Alexander, 1974); overcorrection (Foxx & Martin, 1975; Matson, Stephens & Smith, 1978; Mulick, Bardour, Schroeder, et al, 1980; Madden, Russo & Cataldo, 1981); screening using a blindfold (Singh

and Winton, 1983); physical restraint plus verbal reprimand (Bucher, Raykdal & Albin, 1976); and physical restraint (Winton & Singh, 1983). In a recent study (1984) Singh and Bakker compared the effects of the Foxx and Martin (1975) overcorrection procedure (which emphasized correction of the scavenging act, as well as practice in alternative appropriate behaviors) to those of a 10-second physical restraint procedure. The results indicate that while both procedures reduced the occurrence of pica in two profoundly retarded individuals, physical restraint was more effective in terms of immediate response suppression.

In summary, pica is a serious problem (commonly observed in institutionalized mentally retarded persons, especially the severely and profoundly retarded. While its etiology is still unclear, it can be usefully seen as a learned behavior which is amenable to behavioral treatments. A limited number of studies suggest that overcorrection, physical restraint, timeout, and screening may be effective in controlling pica. There is a need to further expand and combine techniques as well as explore other behavioral treatment modalities. Taking a systematic look at antecedent, precursor behaviors such as scavenging which may be targeted in an effort to reduce the resultant behavior of pica may prove to be a fruitful avenue of investigation. The present study is an attempt in that direction.

Method

Subject and Setting:

A non-verbal, severely retarded, 24-year-old female resident of a regional state facility for the retarded participated. She has a long history of pica stemming from early childhood when the family reports that she ingested pebbles and stones. More recently, she has repeatedly ingested metal items such as screws, nails and bolts which she loosens from furniture and metal work in her living unit. She also unravels clothes and ingests them as well as other cloth items and buttons. There does not seem to be a pattern to classes of items ingested. Her eating of regular food items and her appetite are normal.

At the age of seventeen years she underwent abdominal surgery, and a number of items including hearing aid batteries was removed from her stomach and upper gastrointestinal tract. A serious problem is that she is very adroit and surruptitious about scavenging for pica items. All incidents of pica are not observed by staff. Recent x-rays revealed that a number of metal items were again in her gastrointestinal tract including a metal screw two inches long. Repeated x-rays suggest that several items were passed through bowel movements. But since x-rays cannot be repeated frequently a non-invasive searching device was needed. She wore a helmet with a face grid and was provided with close staff supervision to control the problem. In addition

discrimination trials were run to teach her the difference between edible and non-edible items as well as to teach her self-control in being able to inhibit the ingestion of these non-edibles. The consequence for attempted or actual pica was a verbal reprimand "No" and a water mist. The program was successful in teaching her to discriminate edible from non-edible items with great reliability. In addition, when staff were immediately present with the water bottle, she showed self-control in not even picking up small inedible objects. However, when the discriminative cue of the water bottle was not immediately present pica returned as evidenced by the recent x-rays.

Due to the surruptitious nature of her pica and the seriousness of her behavior in terms of the degree of life-threat posed the decision was made by the interdisciplinary team to begin a more comprehensive approach emphasizing the targeting of antecedent, precursor behaviors. The following procedures were reviewed and approved prior to implementation by the resident's psychologist, interdisciplinary team, physician, an internal review committee (Behavior Modification Committee), Director, local human rights committee, and State appointed advocate.

Procedure:

Antecedent scavenging behavior was reliably identified by means of a functional analysis. A list of items she has ingested was made. Immediately following each incident of scavenging (looking, scanning, searching) she is given a verbal reprimand

"No" and redirected to a play activity. She receives verbal and social positive reinforcement for giving non-edible items she has scavenged to staff in order to shape this alternative adaptive behavior. These are items which she has ingested in the past. Immediately upon her putting non-edible objects in her mouth staff block the behavior, give the firm verbal reprimand ("No, Don't eat that, it can hurt you"), and physically restrain her in a chair (hold her manually with arms crossed at the chest) until she is calm for 2 minutes. This verbal reprimand and restraint procedure are used for actual pica (attempts which cannot be successfully blocked) as well as attempted pica.

In summary, four behaviors are targeted: 1) scavenging defined as looking, scanning, and searching; 2) giving non-edible items (which she has ingested in the past) to staff; 3) actual pica; and 4) attemped pica. Date, time the restraint was begun and ended, duration of the restraint interval, antecedent, targeted behavior, consequence, and staff member(s) involved are recorded on a daily basis on a behavior program record sheet.

A portable metal detector (Edmund Scientific Searchalert E31, 569) is used daily as a non-invasive searching device to monitor possible ingestion of metal objects so that harmful x-rays can be avoided. The reliability of this measure was determined by correlating the results of scanning her torso with the metal detector with initial x-rays taken immediately after. She wears a fencing helmet (saber type) with a fine mesh, metal grid face mask

and canvas piece which drapes over her shoulders. The mask is locked from behind using a combination lock. She wears the face mask when not directly in full view of staff. Extreme care is taken in safeguarding and documenting the use of this mechanical restraint device including a minimum of 30 minute checks and removal for 10 minutes following her wearing the helmet for 2 consecutive hours. She receives regularly scheduled snacks (i.e. popcorn) throughout the day and evening as a possible hypothesized substitute for non-edibles. In addition, staff check her room at least once during each shift (total of 3 shifts per 24 hours) to look for and discard loose screws, or other small items she may ingest or is known to have ingested in the past.

Results

(1) Actual pica (ingesting non-edibles) was reduced by 100% to a zero incident per month frequency for 3 consecutive months from a baseline measure (see Figure 1, Graph 1). (2) Attempted pica (attemping to ingest non-edibles) was reduced by 100% to a zero incident per month frequency for 3 consecutive months from a baseline measure (see Figure 1, Graph 2). (3) Giving objects to staff (objects which may be ingested) decreased by 86% for 3 consecutive months from a baseline measure (the mean of the first 3 consecutive months of treatment versus the mean of the last 3 consecutive months of treatment), (see Figure 2, Graph 1). (4) Scavenging was reduced by 72% for 3 consecutive months from a baseline measure (the mean of the first 3 consecutive months of

treatment versus the mean of the last 3 consecutive months of treatment), (see Figure 2, Graph 2). Results (1), (2), and (4) were in the predicted direction. Result (4) was not in the predicted direction.

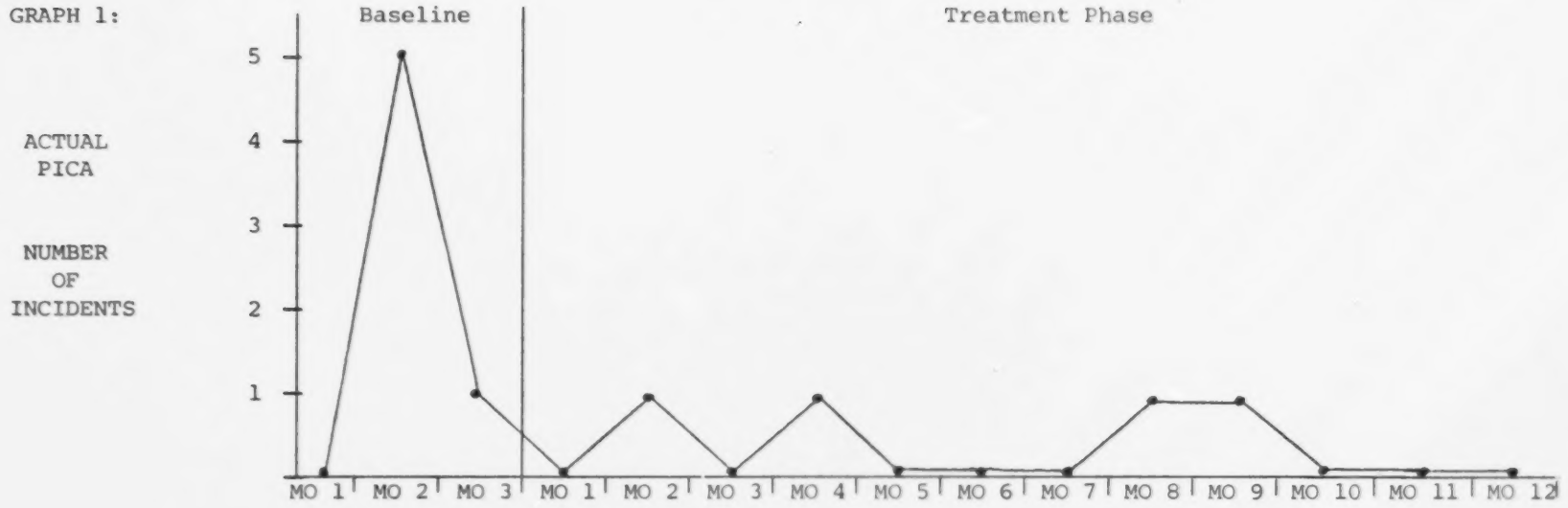
Conclusions

Results indicate that scavenging behavior and resultant pica can be significantly reduced using behavioral techniques. Scavenging behavior in this case appears to be a reliable precursor to pica. Redirecting scavenging behavior can be a valuable first step in reducing attempted and actual incidents of pica. Furthermore, the results support and extend the research of Winton & Singh, 1983, that relatively short duration physical restraint can help control pica. A modified helmet may prove to be an important adjunct in treating potentially life-threatening pica in this and other cases. Giving items to staff which may be ingested did not increase with positive reinforcement possible because the subject generalized from attempts to redirect negative scavenging behavior.

This research suggests the need for a comprehensive functional and environmental analysis to determine antecedent conditions which may heavily impact on the resultant pica behavior (in this case scavenging). No one behavioral technique appears to be most effective in reducing pica. Combining techniques is clearly advantageous as in this study. There is a need for further

research in this area due to the potentially life-threatening nature of the behavior and its prevalence in institutional settings for the mentally retarded.

FIGURE 1


GRAPH 1:
Baseline
Treatment Phase
ACTUAL PICA
NUMBER OF INCIDENTS
5
4
3
2
1
MO 1
MO 2
MO 3
MO 1
MO 2
MO 3
MO 4
MO 5
MO 6
MO 7
MO 8
MO 9
MO 10
MO 11
MO 12

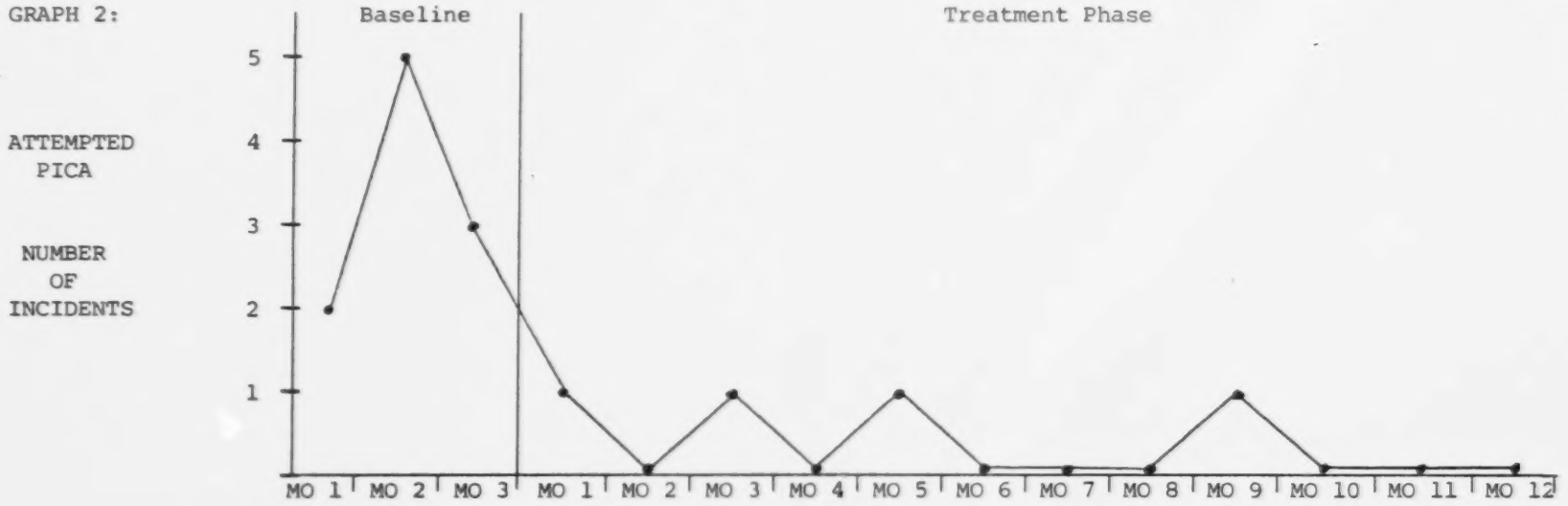
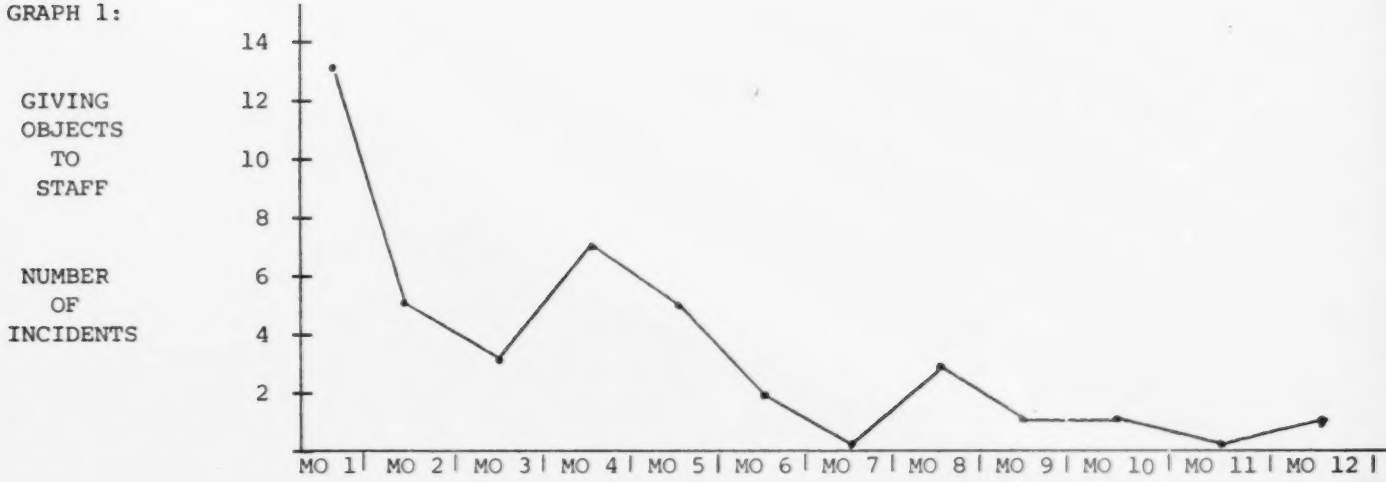
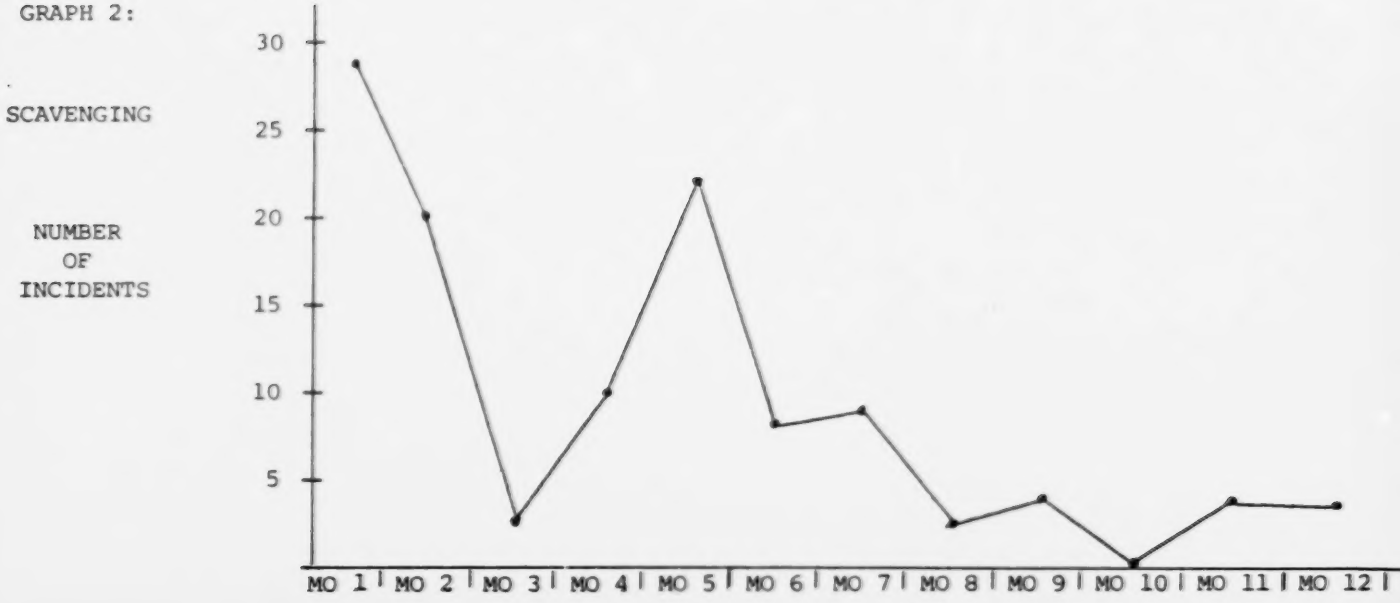

GRAPH 2:
Baseline
Treatment Phase
ATTEMPTED PICA
NUMBER OF INCIDENTS
5
4
3
2
1
MO 1
MO 2
MO 3
MO 1
MO 2
MO 3
MO 4
MO 5
MO 6
MO 7
MO 8
MO 9
MO 10
MO 11
MO 12

FIGURE 2

GRAPH 1:



GRAPH 2:



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